



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

DEC 10 2013

Herschel T. Vinyard
Secretary
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Dear Secretary Vinyard:

The U. S. Environmental Protection Agency has completed its review of the site specific alternative criteria (SSAC) for total phosphorus (TP) and total nitrogen (TN) for Goat Creek. The Florida Department of Environmental Protection submitted the SSAC to the EPA on July 31, 2013 as new or revised water quality standards with the necessary certification by the FDEP general counsel, pursuant to 40 CFR Part 131. The SSAC are site specific numeric interpretations of paragraph 62-302.530(47)(b), Florida Administrative Code (F.A.C.), referenced in paragraph 62-302.531(2)(a), F.A.C. FDEP submitted the numeric interpretations of the state narrative nutrient criterion for WBID 3107A expressed in the Goat Creek Total Maximum Daily Load report as the SSAC. FDEP intends for these SSAC to serve as the numeric nutrient criteria for TN and TP for Goat Creek.

In accordance with section 303(c) of the Clean Water Act, I am hereby approving the SSAC for Goat Creek as revised water quality standards for TN and TP. Any other criteria applicable to this waterbody remain in effect. The requirements of paragraph 62-302.530(47)(a), F.A.C. also remain applicable. The details of the SSAC are discussed in the enclosed documentation. We would like to commend you and your staff for your continued efforts in environmental protection for the State of Florida.

If you have any questions regarding the EPA's approval, please contact me at (404) 562-9345 or have a member of your staff contact Ms. Annie M. Godfrey, Water Quality Standards Section Chief at (404) 562-9967.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Giattina".

James D. Giattina
Director
Water Protection Division

Enclosure

cc: Matthew Z. Leopold, FDEP
Daryll Joyner, FDEP

**Decision Document for Hierarchy 1 Site Specific Alternative Criteria
for Goat Creek Marine Segment WBID 3107A**

Summary Information

WBID	Description	Class	Waterbody Type	Listing Parameter
3107A	Goat Creek	Class II and Class III	Marine	Corrected chlorophyll <i>a</i> (ChlaC)

A nutrient Total Maximum Daily Load (TMDL) for Goat Creek WBID 3107A was developed by the Florida Department of Environmental Protection, pursuant to section 303(d) of the Clean Water Act (CWA). This TMDL was developed to identify the level of nutrients that would prevent an imbalance of flora and fauna as required by the state's narrative nutrient criterion at paragraph 62-302.530(47)(b), Florida Administrative Code (F.A.C.). FDEP determined that the total phosphorus (TP) load of 3,376 pounds per year (lbs/yr) and the total nitrogen (TN) load of 18,405 lbs/yr, not to be exceeded as annual loads, would meet its narrative criterion. The TP and TN loads were adopted as TMDL values at subsection 62-304.520(12), F.A.C., on June 7, 2013. FDEP has submitted the TN and TP loads from the TMDL for the EPA review as hierarchy 1 site specific alternative nutrient criteria (SSAC) for Goat Creek WBID 3107A, pursuant to section 303(c) of the CWA and EPA's implementing regulations at 40 CFR Part 131. This decision document approves the SSAC for a TP load of 3,376 lbs/yr and a TN load of 18,405 lbs/yr, not to be exceeded as annual loads, as the hierarchy 1 criteria for Goat Creek WBID 3107A. Any other criteria applicable to this waterbody remain in effect including the requirements of paragraph 62-302.530(47)(a), F.A.C.

In a letter dated July 31, 2013, from Matthew Z. Leopold, General Counsel for FDEP, to A. Stanley Meiburg, Acting Regional Administrator of EPA's Region 4 Office, FDEP submitted the numeric interpretations of the state narrative nutrient criterion as expressed in the Goat Creek WBID 3107A TMDL as the SSAC for the Goat Creek WBID 3107A. These SSAC serve as the primary site specific interpretations of Florida's narrative water quality criterion for nutrients set out in paragraph 62-302.530(47)(b), F.A.C., in accordance with paragraph 62-302.531(2)(a), F.A.C. Pursuant to section 303(c) of the CWA, these revised water quality standards are subject to review and approval by the EPA since FDEP intends for these SSAC to serve as numeric nutrient criteria for TN and TP for Goat Creek WBID 3107A. In the July 31, 2013, letter, the FDEP General Counsel certified that the revised water quality standards were duly adopted pursuant to Florida law.

The EPA's decision to approve these criteria is subject to the results of consultation under section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service and National Marine Fisheries Service. By approving the standards "subject to the results of consultation," the EPA retains its discretion to take appropriate action if the consultation identifies deficiencies in the standards requiring remedial action by the EPA. The EPA will notify FDEP of the results of the section 7 consultation upon completion of the action.

Description of waters for which the SSAC have been proposed

Goat Creek is located in southeast Brevard County, along the east central Florida Coast. The watershed of the creek is located immediately south of City of Malabar (See map on page 4). Together with the Eau Gallie River, Crane Creek and Turkey Creek to the north and Kid Creek and Trout Creek to the south, Goat Creek drains the part of the north central Indian River Lagoon (IRL) basin that is physiographically designated as the Cocoa-Sebastian Ridge (Brooks, 1982). Goat Creek drains a watershed of about 7,161 acres (11 square miles). Specifically, Goat Creek drains to segment IR-13 of the central IRL mainstem. The watershed of the creek has a significant amount of wetland areas that are poorly drained. Compared to other major tributaries in the central IRL area, the hydrology of Goat Creek has not been greatly altered. The dominant land cover types in watershed of the creek are natural lands such as rangeland, upland forest and wetlands. The creek flows in a southwest to northeast direction. It is divided into a freshwater segment and marine segment with a dividing point roughly located at about 100 meters southwest of the junction of Duane Street and Lynn Street. The freshwater segment drains about 99% of the Goat Creek watershed. The immediate watershed area of the marine segment, which is about 0.8 miles long, is only about 1% of the total watershed area.

WBID 3107A is a Class II marine waterbody, with a designated use of shellfish propagation or harvesting. This designated use requires the waterbody to also support the Class III designated uses of recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Discussion of how the loads were derived

Goat Creek was verified for nutrient impairment based on annual average ChlaC values that exceeded the historic minimum annual ChlaC values (1999-2003) in two consecutive years (2009 and 2010). The waterbody was added to the Verified List of impaired waters for the IRL Basin by the Secretarial Order on February 7, 2012. To address the nutrient impairment in WBID 3107A, FDEP developed a TMDL dated August 2012. The Nutrient TMDL for Goat Creek WBID 3107A was adopted at 62-304.520(12), for a TP load of 3,376 lbs/yr and TN load of 18,405 lbs/yr, not to be exceeded as annual loads.

FDEP utilized a ChlaC concentration derived from the receiving water body, the central IRL. FDEP adopted the 2004 South Indian River Lagoon Final Integrated Project Implementation Report and Environmental Impact Statement (IRL-S Plan) TN and TP targets to protect seagrass as identified in the IRL-S Plan. The IRL-S Plan developed nutrient targets at Roosevelt Bridge (WBID 3913) that were considered protective of healthy seagrass beds in the lagoon. TP values were calculated based on the adjusted mean TP of all Florida estuaries, less some estuaries with high geologic inputs of phosphorus. TN values in the IRL-S Plan were identified based on the work of Chamberlain and Hayward (1996), which called for a 30 percent TN reduction (yielding a concentration of 0.721 mg/L with 1999-2004 data). The IRL-S Plan nutrient concentrations were reassessed by FDEP and the South Florida Water Management District in light of additional new water quality data. Based on this further assessment, FDEP validated the findings of the IRL-S Plan by comparing median 2000-2007 concentrations of TN, TP and chlorophyll *a* (chl *a*) data for all estuaries in the state. The IRL-S TN and TP concentration targets developed for the most downstream WBID 3193 at Roosevelt Bridge were used as targets in the Indian and Banana River Lagoon TMDLs and St. Lucie TMDL and are appropriate for Goat Creek WBID

3107A which connects Goat Creek to the IRL. The nutrient targets for TN of 0.72 mg/L and for TP of 0.081 mg/L that were developed in the IRL-S study are applicable to Goat Creek WBID 3107A and were used to develop the TN and TP loading targets for Goat Creek.

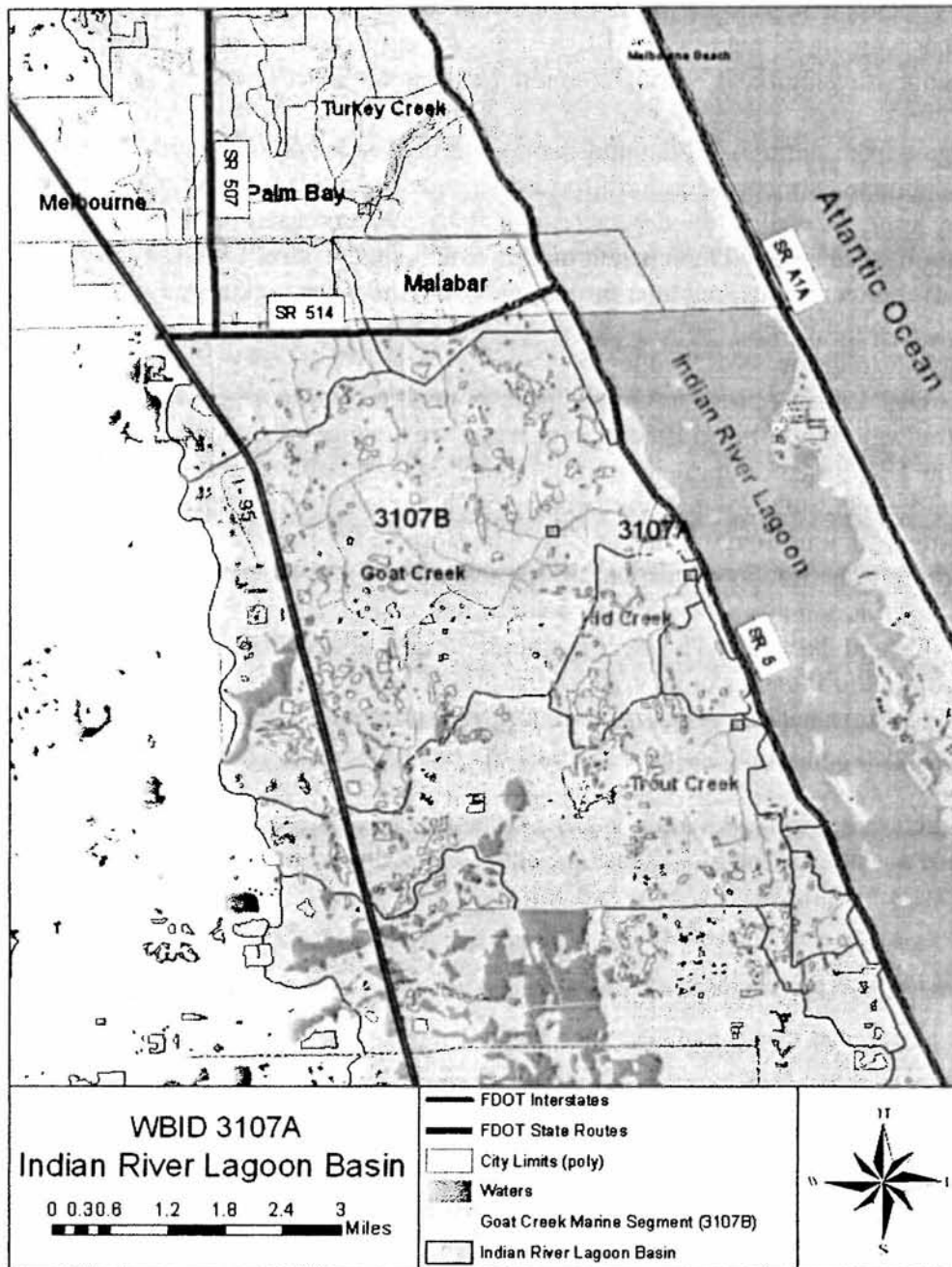
The Goat Creek targets from the IRL-S Plan and corresponding loads and concentration for this and other upstream segments are expected to fully restore balance to the flora and fauna in the WBID in which they apply as well as the downstream estuary system based on the use of the most sensitive endpoint of seagrass. The nutrient targets established in this TMDL are regarded as being protective of the waterbody and also protective of downstream conditions in the IRL.

Consideration of TMDL loads as SSAC values

For this waterbody FDEP chose a prescriptive endpoint of healthy seagrass beds to protect the designated uses of the waterbody. Seagrass depth targets were developed to control nutrients and restore seagrass in the IRL based on models linking phosphorus and nitrogen loads to seagrass depth targets (Steward et al. 2005). FDEP used a conceptual model to relate seagrass health through a series of steps back to input of TN and TP. The steps in the pathway consist of: (1) seagrass growth and reproduction, as controlled by (2) seagrass light requirements which are in turn affected by (3) light attenuation in the water column that results in part from (4) chl *a* which is influenced by (5) TN and TP loads. The seagrass depth targets allow for no more than 10 percent departure from natural background conditions. It is expected that achieving the seagrass restoration target will restore healthy seagrass communities and provide healthy habitat for fish and other aquatic organisms in Goat Creek, as well as the IRL. The TMDL loads for TP of 3,376 lbs/yr and TN of 18,405 lbs/yr, not to be exceeded as annual loads, are expected to restore balance to the flora and fauna in Goat Creek WBID 3107A because the seagrass targets used to develop the loads are considered the most sensitive endpoint in the estuary system.

Conclusion

Based on the chemical, physical and biological data presented in the development of the SSAC, the EPA concludes that the SSAC for TN and TP established for the Goat Creek WBID 3107A protect healthy, well-balanced biological communities in the waters to which the SSAC apply and are consistent with the CWA and its implementing regulations. More specifically, the SSAC are consistent with both 40 CFR 131.11(b)(1)(ii) and the EPA's 304(a) guidance on nutrient criteria. The TN and TP SSAC for Goat Creek WBID 3107A will protect water quality and aquatic life. Paragraph 62-302.531(4) will apply to this WBID in conjunction with the SSAC to ensure attainment and maintenance of water quality standards of downstream waters, in accordance with 40 CFR 131.10. In accordance with section 303(c) of the CWA, the SSAC for Goat Creek WBID 3107A for TP of 3,376 lbs/yr and for TN of 18,405 lbs/yr, not to be exceeded as annual loads, are hereby approved as consistent with the CWA and 40 CFR Part 131.



Goat Creek Marine Segment WBID 3107A